

Table 25. 2010 Sawfly Winter Hardiness Winter Wheat Nursery Mill & Bake (Exp. 5901)

Location: Bozeman, MT

Sample No.	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	L* Brightness	a* Green - Red	b* Blue - Yellow	Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixing Time, min	Mixing Time, min	Mixing Time, min	Mixing Time, min	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume
1	Rampart	check	HRW		63.3	15.7	71	13.9	90.1	-1.70	11.2	1.43	0.38	MH	2	5.3	65.6	12.3	75.8	1235		
2	Genou	check	HRW		61.8	15	71.3	13.3	90.5	-1.59	10.1	1.45	0.38	MH	4	4.5	64.5	12.4	74.7	1250		
3	CDC Falcon	check	HRW		57.3	13.9	66.8	11.9	90.5	-1.24	8.9	1.42	0.40	M	4	3.8	63.1	7.9	72.8	1120		
4	Decade	check	HRW		63.3	14.8	69.5	12.7	90.5	-1.12	8.5	1.46	0.39	M	4	7.5	66.4	19.8	77.6	1185		
5	Judee	93X312E14/NuHorizon	HRW		62.6	14.4	69.8	12.7	90.2	-1.40	10.2	1.57	0.39	M	3	5.3	66.4	9.1	75.6	1215		
6	Bearpaw	DMS/Rampart//Pronghorn/3/2*Ram	HRW		64.8	14.9	70	12.8	90.4	-1.34	9.5	1.54	0.40	M	2	4.5	66.5	7.1	75.7	1080		
7	MTS1048	Choteau/3*Jerry	HRW		53.3	14.6	67.7	12.5	90.2	-1.34	9.2	1.50	0.39	M	2	2.9	63.8	3.3	73.0	1055		
8	MTS1054	MT9513/NW98S059//MTS0023	HRW		60.0	13.6	69	11.9	90.6	-1.49	10.1	1.41	0.38	M	4	4.4	64.5	11.6	74.7	1090		
9	MTS1055	MT9513/NW98S059//MTS0023	HRW		61.4	13	70.1	11.1	90.7	-1.52	9.9	1.32	0.39	M	2	4.2	63.1	9.0	72.8	1060		
10	MTS1058	MTS0012/MTW0072//Morgan	HRW		70.2	14.2	71.7	12.2	90.2	-1.45	10.4	1.51	0.39	M	4	4.7	65.1	9.4	74.8	1150		
11	MTS1061	MTS0012/MTW0072//Morgan	HRW		61.2	14.1	71.6	12.4	90.4	-1.23	9.5	1.49	0.37	M	5	9.1	66.7	23.9	78.9	1125		
	MIN				53.3	13.0	66.8	11.1	90.1	-1.70	8.5	1.32	0.37		2	2.9	63.1	3.3	72.8	1055		
	MAX				70.2	15.7	71.7	13.9	90.7	-1.12	11.2	1.57	0.40		5	9.1	66.7	23.9	78.9	1250		
	AVE				61.7	14.4	69.9	12.5	90.4	-1.40	9.8	1.46	0.39		3.3	5.1	65.1	11.4	75.1	1142		

Table 26. 2010 Sawfly Winter Hardiness Winter Wheat Nursery Mill & Bake (Exp. 5952)

Location: North Havre, MT

Sample No. i = lines in 2012 Intrastrate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	Color			Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixo Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume
									L* Brightness	a* Green - Red	b* Blue - Yellow									
1	Rampart	check	HRW		55.9	11.5	66.4	10.2	91.2	-1.99	10.4	1.23	0.38	LM	4	6.9	61.9	14.5	71.6	1010
2	Genou	check	HRW		56.6	9.7	64.3	8.2	91.5	-1.81	8.8	1.25	0.37	LM	5	7	55.7	13.4	67.9	910
3	CDC Falcon	check	HRW		44.5	10.0	62.1	8.0	91.6	-1.43	7.5	1.31	0.39	LM	3	6.9	52.1	10.2	63.8	910
4	Decade	check	HRW		41.3	9.9	64.7	8.2	91.4	-1.44	7.6	1.21	0.36	L	5	9.5	55.6	17.6	68.8	925
5	Judee	93X312E14/NuHorizon	HRW		45.1	9.7	64.3	8.0	91.2	-1.86	9.5	1.28	0.37	LM	4	5.7	53.0	10.2	63.7	925
6	Bearpaw	DMS/Rampart//Pronghorn/3/2*Ram	HRW		53.4	9.7	66.4	8.1	91.4	-1.71	8.5	1.21	0.36	L	4	7.2	52.7	10.0	64.9	820
7	MTS1048	Choteau/3*Jerry	HRW		48.1	10.8	67.2	8.8	91.3	-1.69	8.7	1.21	0.39	LM	3	4.5	54.1	5.6	63.8	935
8	MTS1054	MT9513/NW98S059//MTS0023	HRW		39.4	9.3	65.0	7.6	91.5	-1.78	8.8	1.21	0.37	LM	5	6.6	54.1	11.2	67.8	905
9	MTS1055	MT9513/NW98S059//MTS0023	HRW		40.9	9.2	64.6	8.0	91.7	-1.67	8.8	1.20	0.38	LM	5	6.8	54.6	11.4	66.8	860
10	MTS1058	MTS0012/MTW0072//Morgan	HRW		52.3	10.5	66.9	8.7	91.6	-1.83	10.0	1.32	0.36	LM	4	5.4	57.2	12.1	68.9	940
11	MTS1061	MTS0012/MTW0072//Morgan	HRW		48.4	10.5	65.8	9.2	91.5	-1.35	8.2	1.23	0.36	LM	4	9.2	57.0	12.6	68.2	1050
MIN					39.4	9.2	62.1	7.6	91.2	-1.99	7.5	1.20	0.36		3	4.5	52.1	5.6	63.7	820
MAX					56.6	11.5	67.2	10.2	91.7	-1.35	10.4	1.32	0.39		5	9.5	61.9	17.6	71.6	1050
AVE					47.8	10.1	65.2	8.5	91.4	-1.69	8.8	1.24	0.37		4.2	6.9	55.3	11.7	66.9	926

Table 27. 2010 Sawfly Winter Hardiness Winter Wheat Nursery Mill & Bake (Exp. 5903)

Location: Sidney, MT

Sample No. i = lines in 2012 Intrastrate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	L* Brightness	a* Green - Red	b* Blue - Yellow	Wheat Ash, %	Flour Ash, %	Mixograph Type	Mixing Tolerance	Mixo Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume
1	Rampart	check	HRW		75.1	13.5	67.0	11.8	90.8	-1.81	11.3	1.59	0.39	M	4	9	65.4	20.5	77.6	1060
2	Genou	check	HRW		73.0	11.2	65.2	9.9	91.3	-1.65	9.7	1.53	0.40	M	4	6.8	60.7	15.1	72.4	975
3	CDC Falcon	check	HRW		64.6	11.9	60.0	10.0	91.3	-1.32	8.7	1.45	0.41	LM	5	7.4	60.4	14.8	70.6	1105
4	Decade	check	HRW		65.5	12.9	66.7	11.0	91.2	-1.15	8.3	1.52	0.39	M	5	13.3	66.9	28.0	76.6	1095
5	Judee	93X312E14/NuHorizon	HRW		76.9	12.7	62.9	11.1	90.8	-1.64	10.4	1.63	0.41	LM	4	7.5	63.3	12.6	73.5	1150
6	Bearpaw	DMS/Rampart//Pronghorn/3/2*Ram	HRW		69.4	11.9	66.4	10.6	91.0	-1.61	9.9	1.43	0.39	LM	4	5.2	63.0	11.2	72.7	975
7	MTS1048	Choteau/3*Jerry	HRW		68.4	10.6	66.5	9.3	91.3	-1.88	10.4	1.41	0.40	LM	4	5.4	60.0	11.2	69.7	920
8	MTS1054	MT9513/NW98S059//MTS0023	HRW		63.1	11.4	64.7	9.6	91.2	-1.64	9.9	1.43	0.41	LM	3	6.8	62.8	17.1	72.5	910
9	MTS1055	MT9513/NW98S059//MTS0023	HRW		65.9	12.3	66.2	10.6	91.0	-1.54	9.7	1.44	0.40	LM	3	5.4	63.9	11.6	73.6	995
10	MTS1058	MTS0012/MTW0072//Morgan	HRW		68.0	11.2	68.6	9.8	90.9	-1.64	10.3	1.54	0.39	LM	3	6.3	64.0	13.6	73.7	925
11	MTS1061	MTS0012/MTW0072//Morgan	HRW		65.9	12.4	66.4	10.7	91.0	-1.28	9.0	1.40	0.39	LM	4	13.6	64.4	25.9	76.6	980
MIN					63.1	10.6	60.0	9.3	90.8	-1.88	8.3	1.40	0.39		3	5.2	60.0	11.2	69.7	910
MAX					76.9	13.5	68.6	11.8	91.3	-1.15	11.3	1.63	0.41		5	13.6	66.9	28.0	77.6	1150
AVE					68.7	12.0	65.5	10.4	91.1	-1.56	9.8	1.49	0.40		3.9	7.9	63.2	16.5	73.6	1008

Table 28. 2010 Sawfly Winter Hardiness Winter Wheat Nursery Mill & Bake (Exp. 59)
Location: Means Across Locations

Sample No. n = lines in 2012 Intrastrate	Variety	Pedigree	Class	PPO	Single kernel hardness	Wheat Protein, % (12% m.b.)	Flour Yield, %	Flour Protein, % (14% m.b.)	L* Brightness	a* Green - Red	b* Blue - Yellow	Wheat Ash, %	Flour Ash, %	Mixing Tolerance	Mixo Mixing Time, min	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume
1	Rampart	check	HRW		64.8	13.6**	68.1*	12.0**	90.7	-1.83	11.0	1.42	0.38*	3.3	7.1	64.3**	15.8	75.0**	1102**
2	Genou	check	HRW		63.8	12.0	66.9	10.5	91.1	-1.68	9.5	1.41	0.38*	4.3	6.1	60.3	13.6	71.7	1045*
3	CDC Falcon	check	HRW		55.5	11.9	63.0	10.0	91.1	-1.33	8.4	1.39	0.40	4.0	6.0	58.5	11.0	69.1	1045*
4	Decade	check	HRW		56.7	12.5*	67.0	10.6	91.0	-1.24	8.1	1.40	0.38*	4.7	10.1	63.0*	21.8	74.3*	1068*
5	Judee	93X312E14/NuHorizon	HRW		61.5	12.3	65.7	10.6	90.7	-1.63	10.0	1.49	0.39	3.7	6.2	60.9	10.6	70.9	1097*
6	Bearpaw	DMS/Rampart//Pronghorn/3/2*Ra	HRW		62.5	12.2	67.6*	10.5	90.9	-1.55	9.3	1.39	0.38*	3.3	5.6	60.7	9.4	71.1	958
7	MTS1048	Choteau/3*Jerry	HRW		56.6	12.0	67.1	10.2	90.9	-1.64	9.4	1.37	0.39	3.0	4.3	59.3	6.7	68.8	970
8	MTS1054	MT9513/NW98S059//MTS0023	HRW		54.2	11.4	66.2	9.7	91.1	-1.64	9.6	1.35	0.39*	4.0	5.9	60.5	13.3	71.7	968
9	MTS1055	MT9513/NW98S059//MTS0023	HRW		56.1	11.5	67.0	9.9	91.1	-1.58	9.5	1.32	0.39	3.3	5.5	60.5	10.7	71.1	972
10	MTS1058	MTS0012/MTW0072//Morgan	HRW		63.5	12.0	69.1**	10.2	90.9	-1.64	10.2	1.46	0.38*	3.7	5.5	62.1*	11.7	72.5	1005*
11	MTS1061	MTS0012/MTW0072//Morgan	HRW		58.5	12.3	67.9*	10.8	91.0	-1.29	8.9	1.37	0.37**	4.3	10.6	62.7*	20.8	74.6*	1052*
Average					59.4	12.2	66.9	10.4	91.0	-1.55	9.4	1.40	0.39	3.8	6.6	61.2	13.2	71.9	1026
LSD (0.05)					6.7	1.1	1.9	0.9	0.2	0.15	0.5	ns	0.01	ns	1.9	2.8	4.4	2.3	101
C.V.					6.6	5.1	1.7	5.0	0.1	5.8	3.0	3.9	2.1	22.5	16.4	2.7	19.4	1.9	5.8
P-Value					0.021	0.038	0.000	0.004	0.004	<.0001	<.0001	0.053	0.046	0.392	<.0001	0.014	<.0001	<.0001	0.046